

Flare 8 Root Cause and Corrective Action Analysis Report – NSPS Ja

Acid Gas Flaring Event

April 20, 2021 through April 24, 2021

In accordance with Title 40, Part 60, Subpart Ja, provided below is information related to the discharge to the No. 8 Flare of SO₂ emissions in excess of 500 lbs in a 24-hour period in accordance with §60.103a(c) and the recordkeeping and reporting requirements of 40 C.F.R. §60.108a(c)(6) for the following time periods:

- 4/20/21 04:00 through 4/22/21 01:00
- 4/22/21 06:00 through 4/23/21 04:00
- 4/23/21 05:00 through 4/24/21 15:00

This report also includes information required under the Consent Decree entered in United States, et al. v. HOVENSA, LLC, Civ. No. 1:11-cv-00006.

a. A description of the discharge [40 CFR §60.108a(c)(6)(i)]

These flare discharge events had multiple causes as described below:

On April 19, 2021, the Delayed Coker Unit (DCU) unit was starting up and off gases generated were vented to the No. 8 Flare.

On April 20, 2021, the coker wet gas compressor (CWGC) was successfully brought online at 02:40¹. The H₂S in the flare decreased as startup progressed. However, since the H₂S level did not decrease below the emission limit once startup of the CWGC was complete, Operations immediately began their search for another source of H₂S by methodically isolating each unit's battery flare valves.

On April 21, 2021, the No. 7 Distillate Desulfurizer (7DD) pressure safety valves (PSV) were isolated to the flare but no leaking PSVs were identified.

On April 22, 2021, the 6DD flare header was blocked in and the header pressure increased to 95 psig, which confirmed a H₂S leak.

On April 23, 2021, beginning at approximately 08:00, the gas flow to the No. 8 Flare had a high H₂S content coming from the No. 5 Amine Regeneration Unit (5ARU). The incident was caused by No. 4 Sulfur Recovery Unit (4SRU) shutting down on April 23, 2021 at 04:45 due to the loss of both flame scanners, causing an interlock trip of the unit when all chopper valves closed. 4SRU was re-lit on April 23, 2021 at 05:29 and the acid gas chopper valve opened at 06:58. The clean acid gas (CAG) control valve was slowly starting to open at 07:07, but not fast enough to stop the increase in pressure. The pressure in 5ARU continued to rise, reached the CAG header PSV set pressure of 50 psig at approximately 07:45 and relieved to the No. 8 Flare. The CAG pressure did not drop below 40 psig until 10:03. However, H₂S levels continued to remain elevated. 5ARU was then shut down at 15:30

¹ Flare 8 Root Cause and Corrective Action Analysis Report – Consent Decree, April 19, 2021 through April 20, 2021.

and isolated to prepare the unit to remove and inspect PSVs 360/356 located in the overhead receiver and the tower top. Examination of both PSVs showed PSV 356 had debris in the valve seat due to the relief event. This prevented the PSV from closing after the pressure dropped below the 50 psig set pressure and the valve continued to leak acid gas to the flare until the unit was shut down.

Shortly before the shutdown of 5ARU, the DCU sour off-gas to flare valve opened ~5% beginning at 13:45 and continued to 17:15 hours due to high pressure in the coker fractionator overhead receiver. This event happened just after the shutdown of coke drum D8503 and the switch of DCU to circulation when quench water was introduced to the drum. Adding quench water to a coker drum after completion of a cycle causes a pressure increase in the fractionator tower and CWGC suction drum. In this case, the quench rate was high enough to cause flare valve 8500-PC-1308 to open once pressure exceeded the setpoint of 15 psig. At 20:48, 6DD was also put into circulation to reduce H₂S emissions resulting from the suspected PSV leakage.

On April 24, 2021, Operations discovered two malfunctioning PSVs (PSV 164/165) on the 6DD low pressure flash drum (LPFD) (D-4603). The unit was shut down so the PSVs could be replaced.

- b. The date and time the discharge was first identified and the duration of the discharge [40 CFR §60.108a(c)(6)(ii)] & [Consent Decree Paragraph 60.a]

The initial discharge was first identified on April 20, 2021 shortly after 02:40 when the CWGC was restarted and the H₂S levels did not decrease below the emission limit.

The total duration of the excess emissions associated with these discharge events is approximately 104 hours.

- c. The measured or calculated cumulative quantity of gas discharged over the discharge duration. Include measured H₂S, Total sulfur, SO₂, and flow rate as applicable. [40 CFR §60.108a(c)(6)(iii)-(vii)] and calculations used to determine the quantity of SO₂ that was emitted. [Consent Decree Paragraph 60.b]

Appendix 1 to this document includes the data recorded by the Data Acquisition and Handling System (DAHS) related to the continuous monitoring system located at No. 8 Flare 8. SO₂ emissions are calculated using the total reduced sulfur quantity measured by analyzer in the flare header, the total flow to the flare, and a 99% conversion of total sulfur to SO₂ per 40 CFR §60.108a(c)(6)(vii.)

- d. The steps taken to limit the emissions during the discharge and the duration of the discharge. [40 CFR §60.108a(c)(6)(viii)] and [Consent Decree Paragraph 60.c]
- DCU, 6DD, 7DD were placed on circulation to reduce H₂S emissions to flare in response to potential PSV leak.
 - H₂S producing units were shut down or placed on circulation to reduce the load on the amine regeneration system and the 4SRU.
 - 5ARU was shut down because it was suspected that PSVs 360/356 continued to leak to the flare even below the PSV setpoint.

- PSVs 356 and 360 on 5ARU were removed for inspection, testing, and cleaned.
- PSVs 164 and 165 on 6DD LPFD were removed, inspected, and replaced

e. The root cause analysis and corrective action analysis including an identification of the affected facility, the date and duration of the discharge, a statement noting whether the discharge resulted from the same root cause(s) identified in a previous analysis and either a description of the recommended corrective action(s) or an explanation of why corrective action is not necessary. [40 CFR §60.108a(c)(6)(ix)] and [Consent Decree Paragraph 60.d]

1. *H₂S and other sulfur species were released to No. 8 Flare from the following source(s):*
 - a. 6DD (4/20/21 – 4/24/21)
 - b. 5ARU (4/23/21)
 - c. DCU (4/23/21)
2. *The release to atmosphere occurred at No. 8 Flare, an affected facility under NSPS, Subpart Ja.*
3. *The duration of the event was 104 hours as described in “b” and “c” above.*
4. *This discharge resulted from a similar root cause identified in a previous analysis on the following date(s). However, no previous events were due to loss of flame scanners.*
 - a. January 13, 2021
 - b. January 21, 2021
 - c. February 7, 2021
 - d. February 12, 2021
 - e. February 15, 2021
 - f. February 20, 2021
5. *The root cause analysis:*

Root Cause Analysis	Corrective Action Analysis (or explanation that no corrective is necessary)	Status: completed within 45 days or schedule with proposed implementation and completion dates
The incident was caused, in part, by the 4SRU shutting down due to the loss of both flame scanners.	<u>Adjust operation as follows:</u> At low rates run both SRUs, co-fire propane, “lead” SRU receives CAG/AAG (Ammonia Acid Gas), “lag” unit is on hot standby, permitting streaming within minutes if the lead SRU trips	Completed within 45 days
	<u>Adjust operation as follows:</u> Implement H ₂ S load shedding procedures	Completed within 45 days
	Re-range (2) pressure transmitters (4830-PI-0376 and 47-PI-4712) in the ARU and SRU to 10 psi above corresponding PSVs to monitor relief pressure.	Completed within 45 days
	Add DCS/PHD trend to 4750XV9819 and 4740XV9835 acid gas inlet chopper values	Completed within 45 days
	Inspect and repair 5ARU PSV 356	Completed within 45 days

	<i>and 5ARU RV 360</i>	
	<i>Investigate and improve reliability of the existing flame scanners</i>	<p>Completed within 45 days</p> <p>Flame scanner relay settings were tuned by the vendor and adjustments were made to scanner position, as needed.</p>
	<i>Program a SRU flame scanner delay timer to mitigate shutdowns caused by signal fluctuations for both SRUs</i>	<p>Completed within 45 days</p> <p>SRU is equipped with existing flame scanner delay timer. Current timer settings (3 seconds) are based on vendor's recommendations.</p>
	<p>Perform an engineering evaluation of the following options to improve SRU performance:</p> <ul style="list-style-type: none"> • Hi/low dual flow valve configuration for acid gas feed to the SRUs • Lower range acid gas feed valves to the SRUs • Back pressure control valves on ARU #4/#5 overhead receivers • Configure automatic firing at low CAG rate 	<p>In Process</p> <p>Estimated Completion Date: August 31, 2021</p>
	<i>Perform an engineering evaluation of a different flame scanner technology, such as StackMatch, to replace existing flame scanners.</i>	<i>An engineering evaluation of this recommendation will be considered if the recent tuning performed by the vendor does not improve scanner reliability.</i>
<i>The incident was caused, in part, by leaking PSVs on the 6DD LPFD.</i>	<i>PSVs 164 and 165 on 6DD LPFD were removed, inspected, and replaced</i>	Completed within 45 days
	<i>Purchase additional portable ultrasonic gas leak detectors for Operations personnel and training on how to use them.</i>	<p>In Process</p> <p>Estimated Completion Date: August 31, 2021</p>
	<i>Consider installing pressure gages upstream of all flare header boundary limit block valves.</i>	<p>In Process</p> <p>Estimated Completion Date: July 30, 2021</p>
	<i>Consider installing sample points upstream of all flare header boundary limit block valves.</i>	<p>In Process</p> <p>Estimated Completion Date: July 30, 2021</p>

- f. An analysis of the measures, if any, that are available to reduce the likelihood of a recurrence of the discharge resulting from the same root cause or significant contributing causes in the future. The analysis shall discuss all reasonable alternatives, if any, that are available, the probable effectiveness and cost of the alternatives, and whether an outside consultant should be retained to assist in the analysis. Possible design, operation and maintenance changes shall be evaluated. [Consent Decree Paragraph 60.e]

Corrective measures to reduce the likelihood of a recurrence and their completion status are identified in Section (e)(5).

- g. For Acid Gas Flaring Incidents (not Hydrocarbon Flaring Incidents), specifically identify each of the grounds for stipulated penalties in paragraphs 63, 64 and 65 and describe whether the Incident falls under any of those grounds. [Consent Decree Paragraph 60.f]

The flaring event associated with the 5ARU shutdown on 4/23/21 from 07:45 to 15:30 was determined to be an Acid Gas Flaring Incident. This acid gas flaring event is not a result of any of the root causes identified in paragraphs 63 and 64. The root cause of the acid gas flaring event was not a recurrence of the same root cause that resulted in previous acid gas flaring. As such, the provisions of paragraph 65.a.ii apply. Corrective actions were implemented as noted in Section (e) and therefore, stipulated penalties do not apply.

- h. For any corrective action analysis for which corrective actions are required, a description of the corrective action(s) completed within the first 45 days following the discharge and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates. [40 CFR §60.108a(c)(6)(x)] and [Consent Decree Paragraph 60.h for supplement report]

See response to "e" above.

- i. If the analysis determines that corrective action is not required, the report shall explain the basis for that conclusion. [Consent Decree Paragraph 60.e]

See response to "e" above.

- j. For each discharge from a flare that is the result of a planned startup or shutdown of a refinery process unit or ancillary equipment connected to the flare, a statement that a root cause analysis and corrective action analysis are not necessary because the owner or operator followed the flare management plan. [40 CFR §60.108a(c)(6)(xi)]

The discharge was not the result of a planned startup or shutdown event.

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Appendix 1 - DAHS Records

RSS Daily Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 04/20/2021 04:00 Through 04/24/2021 16:00

Source		FLARE08							
Parameter	(Unit)	H2SPPMD (PPM) 001H	H2SPPMD (PPM) 003H	TRSPPM (PPM) 001H	SO2LBS (LBS) 001H	SO2LBS (LBS) 024H	VG_FLOWT (SCF) 001H	VG_FLOWT (SCF) 024H	
04/20/21	04:00	2,330.0	13,932.6 E	1,884.4	60.6	5,119.7 E	195,298.3	4,210,493.1 E	
04/20/21	05:00	1,518.8 C	2,828.1 E	1,261.9 C	37.6	5,153.2 E	181,153.4	4,247,019.7 E	
04/20/21	06:00	3,168.2 C	2,339.0 E	2,470.1 C	76.2	5,218.9 E	187,416.6	4,267,753.4 E	
04/20/21	07:00	1,679.2	2,122.1 E	1,399.8	42.9	5,257.5 E	186,022.5	4,288,685.6 E	
04/20/21	08:00	1,671.1	2,172.8 E	1,399.7	44.7	5,298.2 E	193,786.0	4,323,581.8 E	
04/20/21	09:00	2,014.1	1,788.1 E	1,611.7	52.4	5,346.3 E	197,541.0	4,350,732.6 E	
04/20/21	10:00	1,799.3	1,828.2 E	1,548.2	49.9	5,389.9 E	195,972.3	4,382,215.0 E	
04/20/21	11:00	1,431.7	1,748.4 E	1,307.8	34.2	5,420.3 E	158,777.8	4,365,430.9 E	
04/20/21	12:00	1,321.2	1,517.4 E	1,276.2	43.7	5,459.5 E	208,095.3	4,405,109.1 E	
04/20/21	13:00	1,292.4	1,348.4 E	1,220.5	41.1	5,495.1 E	204,488.9	4,426,310.2 E	
04/20/21	14:00	1,277.2	1,296.9 E	1,226.0	41.9	5,530.4 E	207,437.5	4,453,343.4 E	
04/20/21	15:00	2,051.0	1,540.2 E	1,781.6	50.5	5,577.1 E	172,152.5	4,454,231.2 E	
04/20/21	16:00	3,117.1	2,148.4 E	2,683.9	78.8	5,605.1 E	178,443.9	4,410,629.7 E	
04/20/21	17:00	2,432.5	2,533.5 E	2,254.4	48.3	5,474.7 E	130,157.2	4,361,603.8 E	
04/20/21	18:00	1,666.2	2,405.3 E	1,662.7	37.3	5,469.5 E	136,127.8	4,259,586.8 E	
04/20/21	19:00	1,226.3	1,775.0 E	1,295.2	36.9	5,499.2 E	173,118.8	4,211,947.9 E	
04/20/21	20:00	1,260.1	1,384.2 E	1,304.7	28.3	5,416.6 E	131,708.2	4,159,340.8 E	
04/20/21	21:00	1,400.4	1,295.6 E	1,419.1	32.0	4,955.6 E	137,038.6	4,145,744.6 E	
04/20/21	22:00	1,266.5	1,309.0 E	1,251.4	33.8	4,262.6 E	163,907.7	4,153,509.6 E	
04/20/21	23:00	1,401.9	1,356.3 E	1,430.3	34.6	3,478.5 E	147,102.2	4,141,981.0 E	
04/21/21	00:00	1,012.9	1,227.1 E	1,029.7	36.2	2,686.2 E	213,318.1	4,208,825.7 E	
04/21/21	01:00	1,454.3	1,289.7 E	1,471.9	37.6	1,880.5 E	155,334.7	4,216,706.7 E	
04/21/21	02:00	4,036.0	2,167.7 E	3,821.0	83.9	1,180.1 E	133,351.9	4,188,769.8 E	
04/21/21	03:00	952.4	2,147.5 E	1,071.5	20.4	1,083.8 E	115,885.5	4,103,636.9 E	

F = Unit Offline
I = Invalid

E = Exceedance
M = Maintenance

C = Calibration
T = Out Of Control

S = Substituted
* = Suspect

U - Startup
D - Shutdown

RSS Daily Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 04/20/2021 04:00 Through 04/24/2021 16:00

04/21/21	04:00	1,829.0		2,272.4	E	1,805.4		37.8	1,061.0	E	127,023.3	4,035,361.8	E
04/21/21	05:00	1,386.1	C	1,389.2	E	1,358.3	C	8.2	1,031.5	E	36,600.3	3,890,808.7	E
04/21/21	06:00	1,500.9	C	1,572.0	E	1,504.6	C	10.4	965.7	E	42,084.6	3,745,476.8	E
04/21/21	07:00	2,205.5		1,697.5	E	2,112.4		29.9	952.7	E	85,855.3	3,645,309.6	E
04/21/21	08:00	1,690.3		1,798.9	E	1,676.1		8.9	917.0	E	32,402.6	3,483,926.1	E
04/21/21	09:00	1,768.7		1,888.2	E	1,735.3		25.9	890.5	E	90,832.5	3,377,217.6	E
04/21/21	10:00	1,530.5		1,663.2	E	1,499.4		24.4	865.0	E	99,006.6	3,280,252.0	E
04/21/21	11:00	1,562.9		1,620.7	E	1,534.3		21.0	851.8	E	82,958.4	3,204,432.6	E
04/21/21	12:00	1,253.6		1,449.0	E	1,284.5		23.2	831.2	E	109,534.0	3,105,871.3	E
04/21/21	13:00	1,151.4		1,322.6	E	1,197.0		21.7	811.9	E	110,131.3	3,011,513.6	E
04/21/21	14:00	931.7		1,112.2	E	1,001.9		21.5	791.5	E	130,166.9	2,934,243.0	E
04/21/21	15:00	735.9		939.7	E	809.3		23.8	764.8	E	178,663.9	2,940,754.3	E
04/21/21	16:00	1,428.0		1,031.9	E	1,377.8		34.8	720.7	E	153,234.6	2,915,545.0	E
04/21/21	17:00	1,436.7		1,200.2	E	1,416.9		27.0	699.4	E	115,688.4	2,901,076.3	E
04/21/21	18:00	1,007.0		1,290.6	E	1,065.3		24.7	686.8	E	140,875.8	2,905,824.4	E
04/21/21	19:00	698.2		1,047.3	E	783.8		15.6	665.5	E	121,046.2	2,853,751.7	E
04/21/21	20:00	677.1		794.1	E	728.4		12.6	649.8	E	105,064.9	2,827,108.4	E
04/21/21	21:00	769.3		714.9	E	722.9		14.0	631.9	E	117,911.8	2,807,981.6	E
04/21/21	22:00	543.6		663.3	E	527.8		11.2	609.2	E	128,347.0	2,772,420.9	E
04/21/21	23:00	49.5		454.1	E	32.4		0.7	575.3	E	128,582.7	2,753,901.5	E
04/22/21	00:00	13.7		202.3	E	16.4		0.3	539.5	E	122,438.3	2,663,021.7	E
04/22/21	01:00	596.8		220.0	E	654.5		12.0	513.8	E	111,258.2	2,618,945.2	E
04/22/21	02:00	852.7		487.7	E	874.8		18.8	448.7		130,376.8	2,615,970.2	E
04/22/21	03:00	1,342.6		930.7	E	1,308.0		26.4	454.6		122,385.5	2,622,470.1	E
04/22/21	04:00	1,585.6		1,260.3	E	1,504.2		28.2	445.1		113,909.1	2,609,355.9	E
04/22/21	05:00	1,908.1	C	1,612.1	E	1,792.4	C	34.2	471.0		115,767.7	2,688,523.3	E

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RSS Daily Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 04/20/2021 04:00 Through 04/24/2021 16:00

04/22/21	06:00	2,659.8 C	2,051.2 E	2,489.6 C	51.0	511.6 E	124,333.3	2,770,772.0 E
04/22/21	07:00	3,535.0	2,701.0 E	3,234.2	63.2	544.9 E	118,655.6	2,803,572.2 E
04/22/21	08:00	3,790.3	3,328.4 E	3,438.9	73.7	609.6 E	130,162.1	2,901,331.7 E
04/22/21	09:00	2,702.7	3,342.6 E	2,531.0	40.4	624.1 E	96,946.9	2,907,446.2 E
04/22/21	10:00	5,646.6	4,046.5 E	5,018.8	105.4	705.0 E	127,549.8	2,935,989.3 E
04/22/21	11:00	2,003.7	3,451.0 E	1,850.1	53.2	737.3 E	174,625.4	3,027,656.4 E
04/22/21	12:00	1,234.1	2,961.5 E	1,253.3	44.7	758.8 E	216,742.2	3,134,864.5 E
04/22/21	13:00	845.6	1,361.1 E	880.9	29.2	766.3 E	201,579.1	3,226,312.3 E
04/22/21	14:00	520.7	866.8 E	516.0	14.2	759.1 E	166,914.7	3,263,060.1 E
04/22/21	15:00	51.3	472.5 E	26.1	0.5	735.8 E	125,028.4	3,209,424.7 E
04/22/21	16:00	19.4	197.1 E	21.4	0.4	701.5 E	124,469.7	3,180,659.8 E
04/22/21	17:00	47.7	39.4	52.2	1.3	675.8 E	151,620.0	3,216,591.3 E
04/22/21	18:00	2.8 I*	33.5	62.5 I*	I*	675.8 E	82,129.0	3,157,844.5 E
04/22/21	19:00	7.0 I*M	47.7	32.4 I*M	I*	675.8 E	94,903.3	3,131,701.6 E
04/22/21	20:00	133.7 I*M	I	153.1 I*M	I*C	675.8 E	110,201.7	3,136,838.5 E
04/22/21	21:00	1,529.7 C	1,529.7 E	1,454.6 C	27.7	678.8 E	115,649.9	3,134,576.7 E
04/22/21	22:00	1,512.5	1,521.1 E	1,402.4	25.8	688.9 E	111,586.5	3,117,816.2 E
04/22/21	23:00	1,589.0	1,543.7 E	1,493.1	29.4	705.8 E	119,730.1	3,108,963.5 E
04/23/21	00:00	1,479.0	1,526.8 E	1,378.7	26.9	718.7 E	118,716.8	3,105,242.0 E
04/23/21	01:00	2,099.8	1,722.6 E	1,903.7	38.3	745.9 E	122,335.9	3,116,319.6 E
04/23/21	02:00	2,295.1	1,958.0 E	2,019.8	37.8	783.0 E	113,766.5	3,099,709.4 E
04/23/21	03:00	2,579.1	2,324.7 E	2,195.3	40.2	822.9 E	111,365.8	3,088,689.7 E
04/23/21	04:00	2,641.4	2,505.2 E	2,247.1	41.5	852.5 E	112,273.7	3,087,054.4 E
04/23/21	05:00	2,551.8 C	2,590.8 E	2,177.4 C	38.9	872.6 E	108,648.9	3,079,935.6 E
04/23/21	06:00	2,686.8 C	2,626.7 E	2,326.4 C	41.7	887.9 E	108,770.4	3,064,372.6 E
04/23/21	07:00	5,671.4	3,636.7 E	4,750.2	92.2	951.9 E	117,886.3	3,063,603.3 E

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RSS Daily Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 04/20/2021 04:00 Through 04/24/2021 16:00

04/23/21	08:00	53,126.7	20,495.0 E	43,574.1	1,085.4	2,003.1 E	151,308.5	3,084,749.7 E
04/23/21	09:00	107,648.6	55,482.2 E	88,509.9	1,999.1	3,951.2 E	137,197.2	3,125,000.0 E
04/23/21	10:00	95,571.8	85,449.0 E	77,798.4	1,564.7	5,452.8 E	122,173.2	3,119,623.4 E
04/23/21	11:00	71,726.6	91,649.0 E	59,172.9	1,524.6	6,903.8 E	156,514.2	3,101,512.2 E
04/23/21	12:00	17,928.5	61,742.3 E	15,696.0	694.0	7,557.3 E	268,579.1	3,153,349.1 E
04/23/21	13:00	10,841.4	33,498.8 E	9,781.4	325.3	7,777.3 E	202,022.0	3,153,792.0 E
04/23/21	14:00	4,752.7	11,174.2 E	4,296.2	106.1	7,830.2 E	149,998.2	3,136,875.5 E
04/23/21	15:00	6,784.8	7,459.6 E	5,996.6	166.3	7,951.8 E	168,465.8	3,180,312.9 E
04/23/21	16:00	6,375.6	5,971.0 E	5,635.6	148.2	8,070.8 E	159,768.0	3,215,611.2 E
04/23/21	17:00	8,340.6	7,167.0 E	7,419.9	165.5	8,222.0 E	135,473.1	3,199,464.2 E
04/23/21	18:00	4,157.7	6,291.3 E	3,754.6	89.7	8,311.2 E	145,129.1	3,262,464.3 E
04/23/21	19:00	3,179.7	5,226.0 E	2,899.8	62.4	8,373.2 E	130,777.9	3,298,338.9 E
04/23/21	20:00	2,947.2	3,428.2 E	2,661.7	60.9	8,432.8 E	139,058.0	3,327,195.1 E
04/23/21	21:00	2,174.9	2,767.3 E	1,948.1	41.7	8,446.8 E	129,977.3	3,341,522.5 E
04/23/21	22:00	151.5	1,757.9 E	185.2	3.8	8,424.9 E	125,830.8	3,355,766.7 E
04/23/21	23:00	66.8	797.7 E	108.9	2.6	8,398.1 E	147,491.0	3,383,527.6 E
04/24/21	00:00	52.3	90.2	98.8	2.1	8,373.3 E	130,218.5	3,395,029.3 E
04/24/21	01:00	67.3	62.2	113.1	2.5	8,337.5 E	136,095.2	3,408,788.6 E
04/24/21	02:00	65.3	61.6	109.5	2.4	8,302.1 E	135,096.6	3,430,118.7 E
04/24/21	03:00	70.1	67.6	115.9	2.7	8,264.5 E	140,427.8	3,459,180.7 E
04/24/21	04:00	92.3	75.9	137.1	3.7	8,226.6 E	162,220.0	3,509,127.0 E
04/24/21	05:00	58.2 C	73.5	105.5 C	2.9	8,190.6 E	165,684.2	3,566,162.3 E
04/24/21	06:00	47.0 C	65.8	88.3 C	2.3	8,151.2 E	159,180.2	3,616,572.1 E
04/24/21	07:00	73.0	59.4	116.9	3.0	8,062.1 E	156,995.5	3,655,681.3 E
04/24/21	08:00	188.3	102.8	217.9	5.1	6,981.8 E	142,582.0	3,646,954.8 E
04/24/21	09:00	48.3	103.2	93.0	2.3	4,985.1 E	151,704.9	3,661,462.5 E

F = Unit Offline

I = Invalid

E = Exceedance

M = Maintenance

C = Calibration

T = Out Of Control

S = Substituted

* = Suspect

U - Startup

D - Shutdown

RSS Daily Flare 8 Report

Plant: LIMETREE BAY REFINERY

Report Period: 04/20/2021 04:00 Through 04/24/2021 16:00

04/24/21	10:00	72.1	102.9	127.0	3.4	3,423.8 E	163,873.2	3,703,162.4 E
04/24/21	11:00	71.0	63.8	161.9	4.3	1,903.4 E	161,841.2	3,708,489.5 E
04/24/21	12:00	83.7	75.6	165.3	4.6	1,214.1 E	170,351.0	3,610,261.5 E
04/24/21	13:00	74.3	76.3	135.6	3.3	892.0 E	146,268.4	3,554,507.9 E
04/24/21	14:00	76.5	78.2	136.4	1.6	787.5 E	70,476.5	3,474,986.2 E
04/24/21	15:00	67.1	72.6	132.3	2.4	623.6 E	108,999.9	3,415,520.3 E
04/24/21	16:00	66.1	69.9	141.7	3.7	479.1	158,396.1	3,414,148.3 E

CONFIDENTIAL

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